

CLASSIFICATION OF THE FIRE RESISTANCE ACCORDING TO EN 13501-2: 2007 OF A STEEL DOUBLE LEAF DOOR-/FRAME CONSTRUCTION

Assignor: Alara Lukagro B.V.
Postbus 15
2964 ZG GROOT-AMMERS

Issued by: Efectis Nederland BV
Postbus 1090
2280 CB Rijswijk
The Netherlands

Notified Body No.: 1234

Name of the product: double leaf door-frame construction

Classification report No.: 2010-Efectis-R0484

Project number: 2009522

Version number: 01

Issue date: May 2010

This classification report contains 6 pages and can only be used completely.

This report is issued by Efectis Nederland BV (previously **TNO** Centre for Fire Research). Efectis Nederland BV and her sister company Efectis France are full subsidiaries of Efectis Holding SAS since 1 January 2008, in which the Dutch TNO and the French CTICM participate. The activities of the TNO Centre for Fire Research were privatized in Efectis Nederland BV since 1st July 2006. This is in response to international developments and requests by customers. In order to be able to give a better answer to the customer's request and offer a more comprehensive service of high quality and a wider range of facilities, the international collaboration has been further expanded. This is done with highly experienced partners in fire safety in Norway (Sintef-NBL), Spain (Afiti-Licof), Germany (IFT), USA (South West Research Institute) and China (TFRI). Further information can be found at our website.

1 Introduction

This classification report gives the classification of a steel double leaf door construction from Alara Lukagro, according to the procedures given in EN 13501-2: 2007.

2 Details of the classified product

2.1 General

A fire test was carried out on an steel double door leaf-/frame construction, with external dimensions of 2106 x 2383 mm (w x h), consisting of:

- Double leaf steel door ;
- Steel door frame.

For the dimensions and specifications of the materials and components of the examined construction, see figures 1 until 9. Significant details of the construction are given in the paragraphs below.

2.2 Double door leaf

2.2.1 General

Dimensions of each door leaf:

- height: 2383 mm;
- width: 1053 mm;
- thickness: 80 mm.

The door leaf was constructed of:

- 1.5 mm Zincor steel plate (3)¹;
- 76.5 mm thick Rockwool 750 filling, 115 kg/m³ (2);
- 2.0 mm Zincor steel plate (1);
- Kerafix bauplatte S (4), dimensions 76.5 x 15 mm around the edges of the doorleaves.

2.3 Framework

The doorframe consisted of

- Steel thickness 2.0 mm
- Nominal dimensions 67 x 107 mm
- Filling of the doorframe Kerafix Bauplatte S (4) multilayer built up.

2.4 Hardware

2.4.1 Lock

- Type : BMH 4114 in the active leaf with a panic bar
BMH 6130 in the passive leaf with a panic bar
- Lockplate : 255 x 24 mm steel
- Handle : steel
- Top lock : operated by the main lock

¹ The numbers between the brackets refer to the materials mentioned in the parts list

2.4.2 Dog bolts (11)

- Number : on the hinge side of each of the doors three dog bolts
- Diameter : 13 mm
- Positions : at 5 cm from the top and bottom of the door and at half height

2.4.3 Hinges (10)

- Type : ALD hinge (10) diameter 20 mm, height 175 mm
- Number : 3 per door leaf
- Positions : at 200 mm from the top and bottom of the door leaf and at half height

2.5 Sealing profiles

- ALD seal non flammable (5), dimensions 20 x 25 mm used between the doors and the doorframe and between the doors
- Non flammable mastic (7) type Pyropol between the door frame and the supporting construction

2.6 Intumescent strips

- Type : Kerafix flexpan intumescent strip (6)
- Dimensions : 25 x 2 mm
- Number : 2 strips
- Used : between the door and the doorframe and between the doors

2.7 Fixings

- ALD adjustable fixing device
- Metain tapper 6.0 x 75 mm minimum one per hinge, four on header see figure 2.

2.8 Test frame and supporting construction

2.8.1 Test frame

The test frame was constructed of a concrete frame, with internal dimensions of 4000 x 3000 mm (w x h).

2.8.2 Standard Supporting construction

The frame was fixed to an aerated concrete wall with a thickness of 150 mm.

3 Test report & test results in support of classification

3.1 Test report

<i>Name of the laboratory</i>	<i>Name of the assignor</i>	<i>Test reports Nr.</i>	<i>Test method & date</i>
Efectis Nederland BV P.O. box 1090 2280 CB Rijswijk The Netherlands	Alara Lukagro	Efectis report 2010-Efectis-R0427	EN 1364-1:1999

3.2 Test results

Criterion	Time measured from the start of the test during which the criterion based on EN 1364-1:1999 was maintained.
a) Integrity (E) – Cotton pad – Opening gauges – Flames > 10s	78 minutes failed 78 minutes no failure 78 minutes failed
Thermal insulation (I) – Average temperature increase – Maximum temperature increase (I ₁) – Maximum temperature increase (I ₂)	78 minutes failed because of integrity 38 minutes failed 41 minutes failed
c) Radiation (W)	78 minutes failed because of integrity
Heating was terminated after 78 minutes at the request of the sponsor.	

4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with clause 7 of EN 13501-2:2007.

4.2 Classification

The element is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:

E 60
EI₁ 30
EI₂ 30
EW 60

4.2.1 Field of application

These test results are only valid for door-/frame constructions, which are the same in detail to the investigated construction, including materials and door hardware. The following requirements will have to be satisfied:

- a) Turning away from the fire for the criteria integrity, thermal insulation and radiation and turning towards the fire for the criteria integrity and radiation;
- b) For a fire resistance of 30 minutes the dimensions of the door construction may be enlarged by the following percentages:
 - 15 % in height
 - 15 % in width
 - 20 % in surface area;
- c) the type of metal shall not be changed;
- d) the number of stiffening elements for uninsulated doorsets and the number and type of fixings of such members within the panel fabrication may be increased proportionally with the increase of size but not reduced;
- e) because a paint is not expected to contribute to the fire resistance a paint may be applied to the door construction;
- f) the number of fixings used to attach the doorset to the supporting construction may be increased. The centre to centre distance of these fixings shall be increased;
- g) the number of any movement restrictors such as locks, latches and hinges may be increased but shall not be decreased;
- h) the door construction shall be mounted in a wall of stone like material with a thickness of at least 150 mm and a density of at least 600 kg/m³.

This classification document does not represent type approval or certification of the product.

Signed

P.W.M. Kortekaas

Approved

Dr. Ir. G. van den Berg

This report is issued by Efectis Nederland BV (previously **TNO** Centre for Fire Research). Efectis Nederland BV and her sister company Efectis France are full subsidiaries of Efectis Holding SAS since 1 January 2008, in which the Dutch TNO and the French CTICM participate. The activities of the TNO Centre for Fire Research were privatized in Efectis Nederland BV since 1st July 2006. This is in response to international developments and requests by customers. In order to be able to give a better answer to the customer's request and offer a more comprehensive service of high quality and a wider range of facilities, the international collaboration has been further expanded. This is done with highly experienced partners in fire safety in Norway (Sintef-NBL), Spain (Afiti-Licof), Germany (IFT), USA (South West Research Institute) and China (TFRI). Further information can be found at our website.